

The Use of Worst Case Scenarios in Decision Making By Bushfire Fighters

Claire Johnson, Geoff Cumming, Mary Omodei
School of Psychological Science, La Trobe University, Victoria

Expert decision makers in bushfire settings regularly perform well under complex and hazardous conditions, particularly when situations develop in predictable patterns (Klein, 1998). However, decision makers in such settings must also contend with extreme events: worst case scenarios that become reality. Worst cases are low-probability, high-consequence events, which must be examined to ensure safe decision making. Although disaster prevention and mitigation are critical aspects of decision making in bushfire fighting, little systematic research has been carried out concerning the impact of worst case scenarios, both in intuitive and deliberative decision making.

The consideration of worst case scenarios may be particularly difficult for decision makers dealing with the challenges encountered in naturalistic settings. The Naturalistic Decision Making (NDM) tradition rests on the contention that expertise, developed through considerable experience, is essential to effective decision making (Zsombok & Klein, 1997). This poses a problem for anticipating rare extreme events in real-world environments; more experience may bring with it a lower capacity to identify major unexpected catastrophes.

The research reported here investigated worst case scenario reporting by bushfire fighters. Post-incident interviews were conducted with Australian bushfire fighters in the 2004-5 and 2005-6 fire seasons using the Human Factors Interview Protocol (HFIP; Omodei, McLennan, & Reynolds, 2005). The HFIP is a generic tool for conducting post-incident interviews in a range of complex decision environments. In this study, the HFIP was used as a technique to investigate consideration of worst case scenarios by bushfire fighters.

Interview analysis found that those in decision making roles often spontaneously mentioned worst case scenarios when relating a recent fire incident. This suggests that worst case scenarios are often used during decision making on the fireground, although it remains unclear the extent to which they are consciously considered, or may play an implicit role and are only verbalised later as an explanation. Common themes from interviews provided insight into the impact of worst case scenarios on decision making at different levels of command. The findings suggest that worst case scenarios are, and can be, used in decision making processes.

Current research with Australian bushfire fighters will extend these preliminary findings. Using a critical incident interview methodology, this research aims to better understand how worst case scenarios are used in decision making and how they should be used. Interviews will focus on a challenging or unusual incident experienced in the past. These findings will then be carefully developed into training recommendations for Australian fire agencies. The research is expected to deliver outcomes to Australian fire agencies that will increase safety in decision making and therefore, reduce the risk to lives and property.

References

- Klein, G. A. (1998). *Sources of power: How people make decisions*. Cambridge, MA: MIT Press.
- Omodei, M., McLennan, J., & Reynolds, C. (2005). *Understanding the reasons even good firefighters make unsafe decisions: A human factors interview protocol* (Bushfire CRC Project D2.3 Safety in Decision Making and Behaviour, Tech. Rep. No 1). Melbourne, Australia: La Trobe University, School of Psychological Science.
- Zsombok, C., & Klein, G. (Eds.). (1997). *Naturalistic decision making*. Mahwah, NJ: Laurence Erlbaum.